29 July 2011

Federal Communications Commission:

On behalf of JD Equipment Incorporated, one of many agricultural dealers relying on the commercial use of GPS who may be adversely affected, I am writing to express concern about a conditional waiver that was granted by the International Bureau of the FCC to LightSquared Subsidiary LLC in January 2011, after an abbreviated public-notice process. In a proposed letter to the Federal Communications Commission, Congressmen Randy Neugebauer, Colin Peterson and other members are raising valid concerns regarding the process used in granting the waiver and its potential threat to GPS usage.

As a result of the exclusive waiver, LightSquared would be allowed to dramatically expand the terrestrial use of satellite spectrum that neighbors Global Positioning System (GPS) spectrum. LightSquared intends to build 40,000 high-powered ground transmission stations, which would transmit radio signals one billion times more powerful than GPS signals. Since the intended spectrum usage is immediately adjacent to GPS spectrum, it can lead to, and has subsequently been proven to cause, severe interference that effectively renders GPS technology useless.

After much research and testing, Lightsquared published their document "Recommendation of Lightsquared Subsidiary LLC," dated June 30, 2011. This document describes how they understand the affects of their signal on current GPS receivers. In an effort to minimize the interference issues caused by their transmissions to the majority of GPS receivers they are willing to confine themselves to the lower 10mHz spectrum for the start up of their network, thereby allowing time for the GPS manufacturers to adapt and improve technology on their end to be compatible with rejecting the high power Lightsquared signal.

There are three issues with this, from our perspective as the end users and an industry reliant on precision GPS:

1. Our systems, spanning the last 10 years to today, will not be immune to the Lightsquared signal, even with them operating exclusively in the bottom 10mHz segment at start up. As per their numbers, we are located in the .5% they reference as still being affected – the precision GPS users.

2. It is not possible to go back in time and build legacy GPS receivers to work in such a high RF environment in which they were never designed to compete in. There is no add-on fix that is capable, or will ever be capable, of fixing the interference issue with current GPS receivers. This is what spectrum management, spectrum defense, special sub-banding, and licensing according to all of the afore mentioned is supposed to address – protection of a very limited and fragile resource. We already have enough issues with some users not obeying the current regulations in the commercial bands. The last thing we need is a major disruption in an existing technology that is legalized by the very governing agency from whom we are legally bound, in the form of operating licenses and manufacturer licenses, to produce and operate devices that exist under the rules and regulations set forth by said agency. Why are we bound to refrain from causing harmful interference and Lightsquared may potentially be licensed to do so?

3. If the manufacturers of precision GPS receivers start today to create a technology that allows compatibility with the low power signal they receive (from the GPS satellites) and the high power signal they need to reject (Lightsquared) we will be waiting for many years. The laws of physics can not be changed and combating them is what scientists and engineers struggle with in laboratories to attempt to control. Yes, it may be possible to put two opposite displays of physics side-by-side in a lab, but the feasibility of that in the real world is such that it is severely impractical. It isn't something that will change in any reasonable amount of time.

In regard to the current range of products out there for precision use – every one of them would be rendered useless at the flip of a switch. If that switch is a year from now we will be out of Agricultural, and other precision GPS. GPS could conceivably be out forever in the precision applications as it may very well be more practical to replace GPS technology altogether.

Time does not stop, the world does not stop revolving, but I can guarantee everyone in the world would be affected in some capacity if we lost precision GPS with no sufficient replacement. The general public, and those otherwise with technically deficient knowledge on the subject of where precision GPS is being used and in what capacity, do not understand this issue. However, if you are to remove this technology, in what ever capacity people understand it, because of an incompatibility in technology I can guarantee that WILL go noticed. Higher costs growing crops due to efficiency losses including labor increases and input costs mean food prices will rise – for everyone. Higher labor costs in construction due to a loss in efficiency with no precision guidance means construction costs will rise. Thus taxes to support higher construction costs will rise – for everyone. The public will be made acutely aware of yet more rises in living costs, amidst a continued period of recession – one that has yet to bottom out.

The operation of Lightsquared in its current form would cause interference that would have devastating effects on the United States military, emergency responders, aviation, agricultural producers, and others who rely on GPS for everyday needs. You can't fix every legacy GPS system and replacing the entire infrastructure that GPS currently exists in is not a quick process, nor practical in any form.

The Lightsquared business plan has serious implications for all GPS technologies, and could negatively impact millions of Americans. The Neugebauer/Peterson letter to the Commission insisted that LightSquared's waiver only be approved if it can be indisputably proven that there will be no GPS interference. Lightsquared has since agreed their system will cause harmful interference and the only option they see is for GPS manufacturers to implement systems that will reject their higher power signal when there is no practical solution to do so.

Many other GPS constituents are raising these concerns as well. I hope you will embrace Congressmen Neugebauer and Peterson's position, in turn supporting those of us that do rely on the systems Lightsquared will interfere with, and only approve their operation if LightSquared can modify their proposed business plan to not interfere with GPS spectrum, in whole or in part.

Sincerely,

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